

Fig.1.

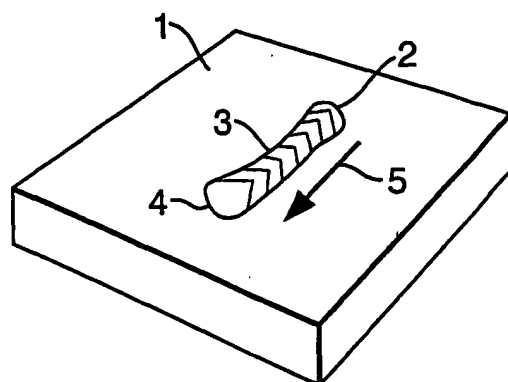


Fig.2.

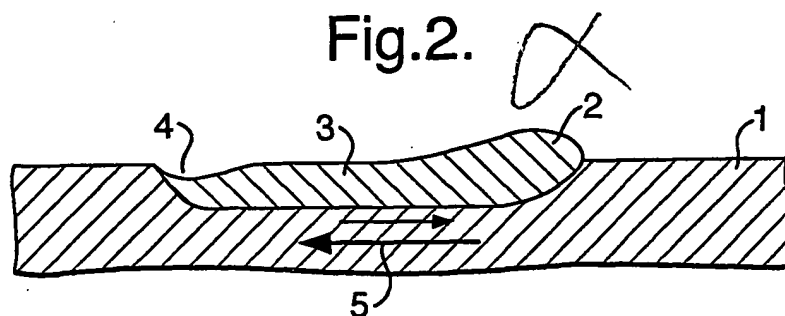


Fig.3.

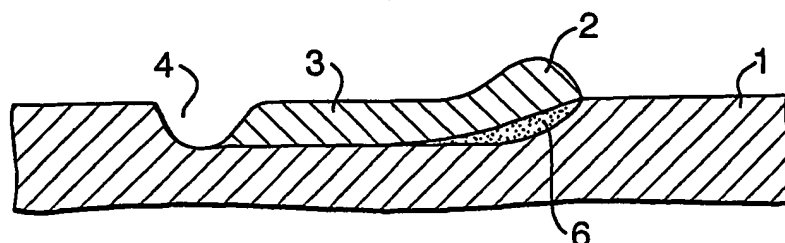


Fig.4.

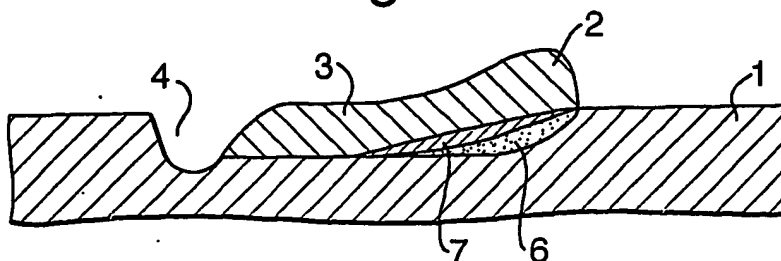


Fig.5.

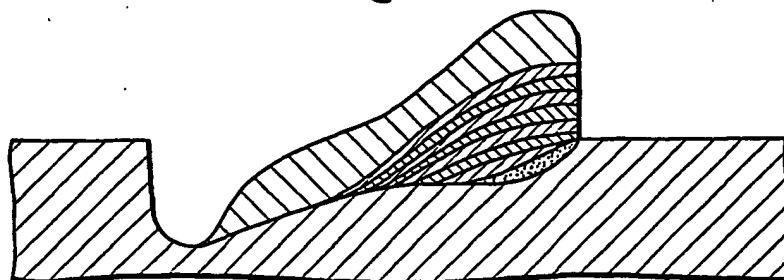


Fig.6.

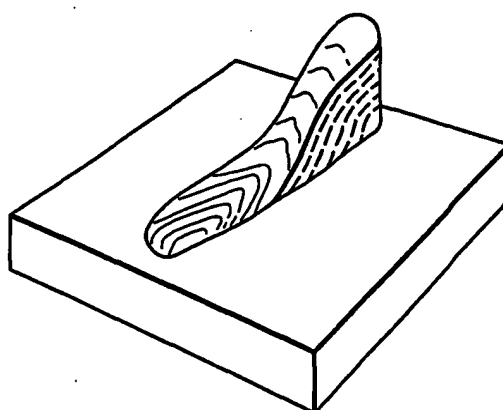


Fig.7.

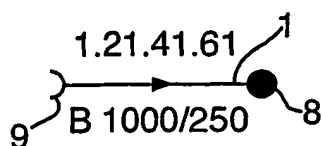


Fig.8.

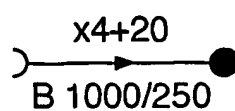


Fig.9.

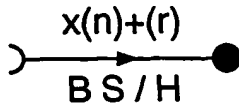


Fig.10.

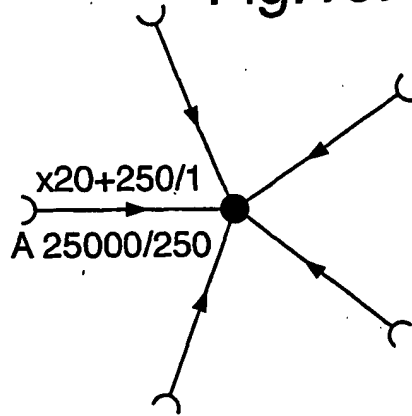


Fig.11.

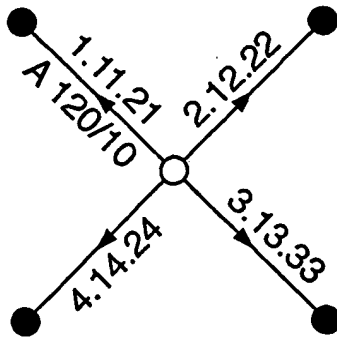


Fig.12:

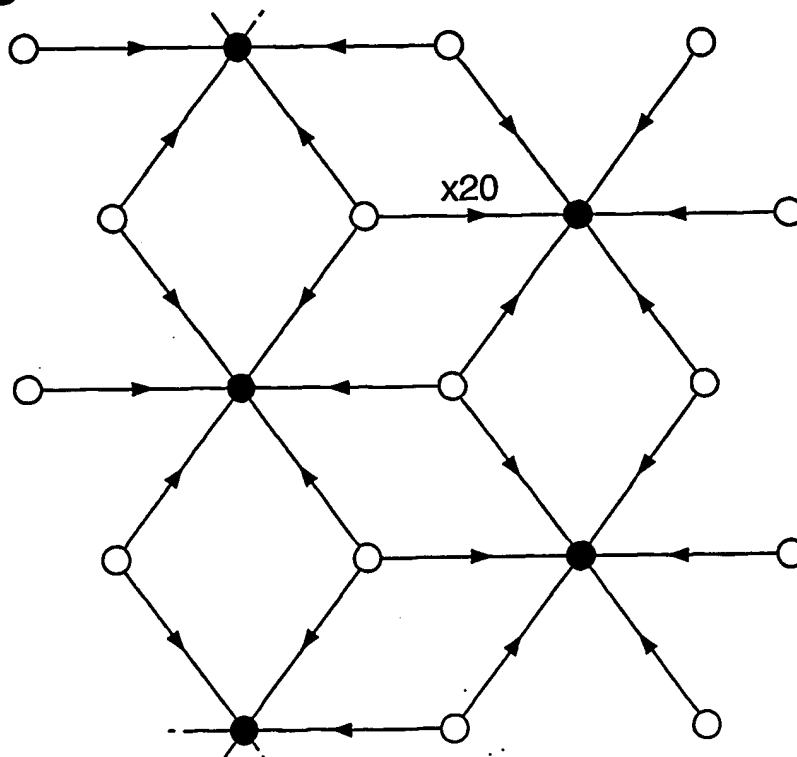


Fig.13.

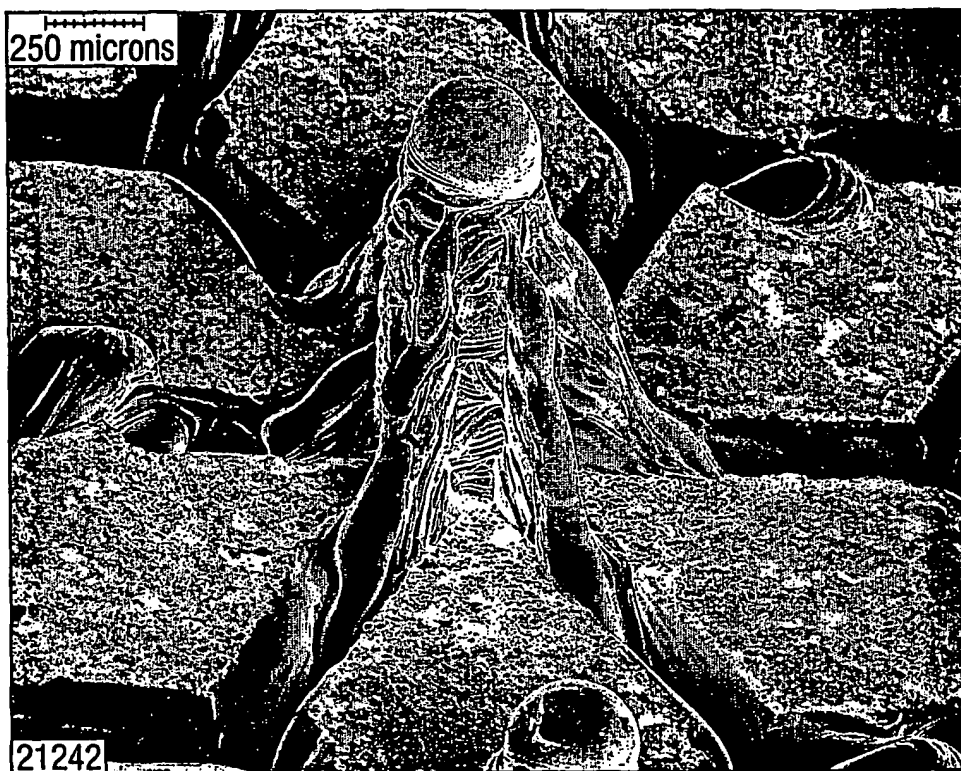


Fig.14.

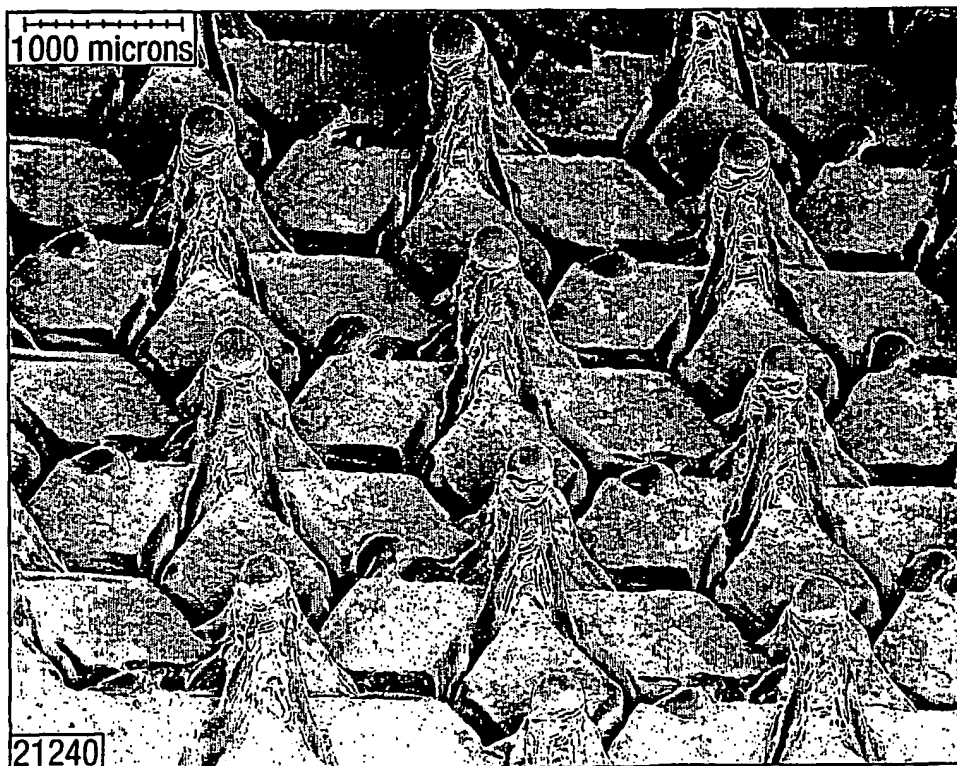


Fig.15.

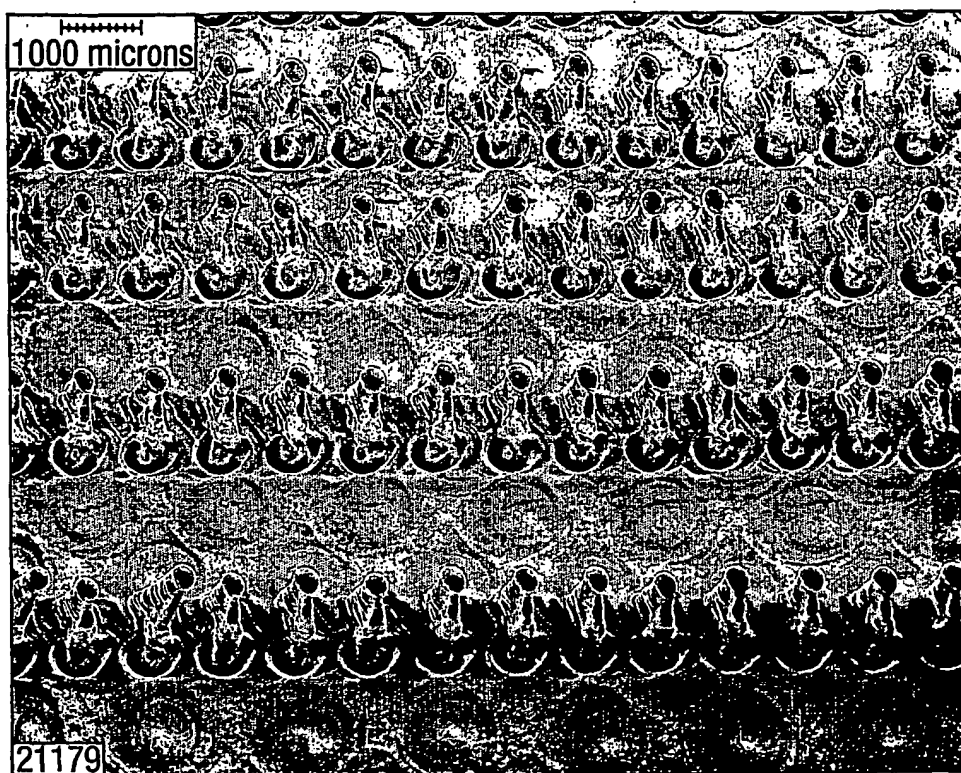


Fig.16.

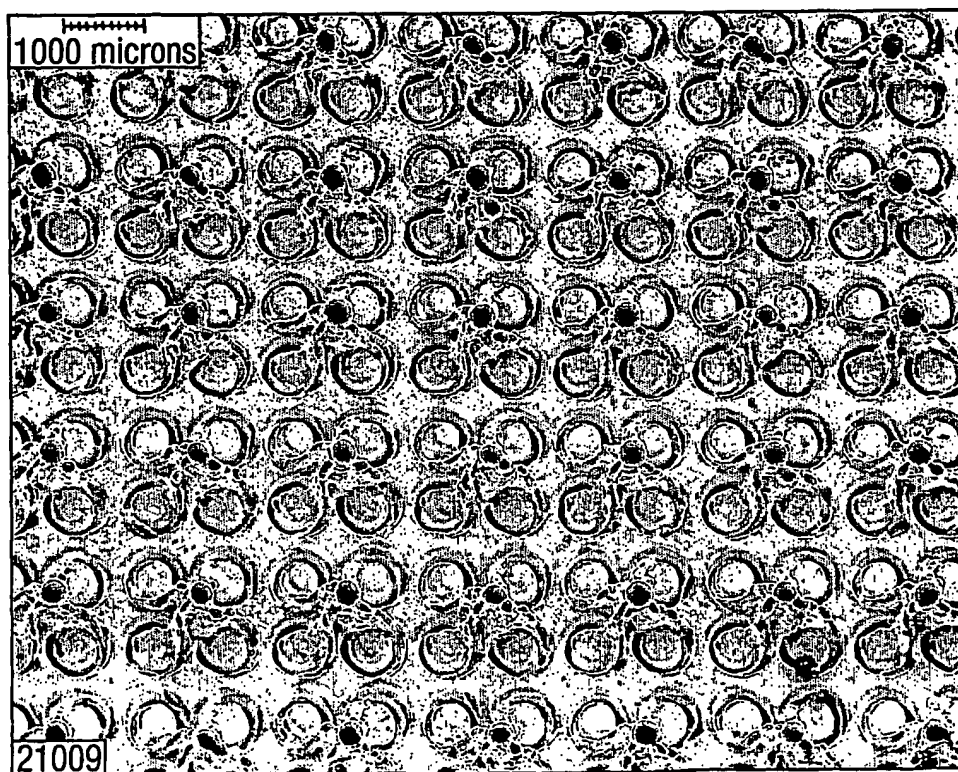


Fig.17.

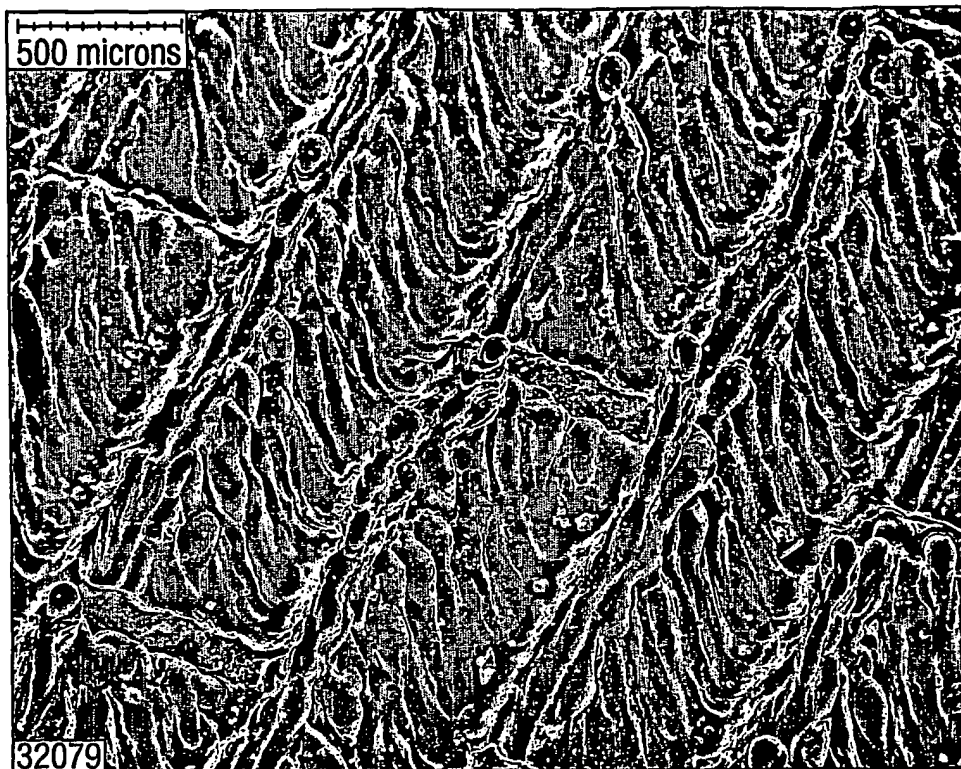


Fig.18.

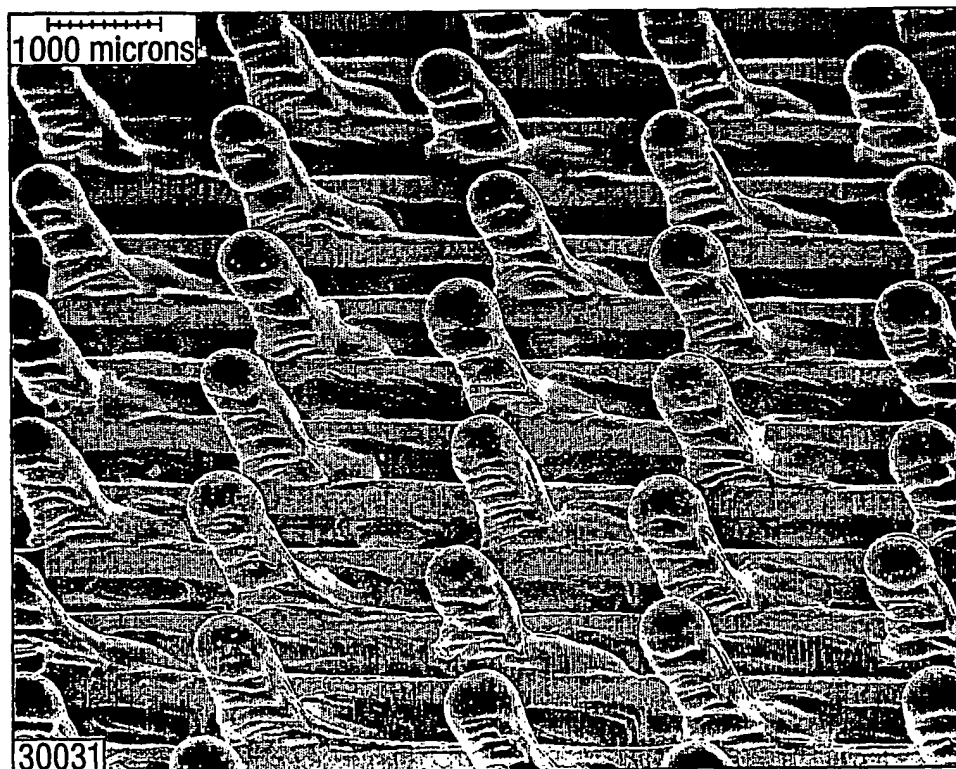


Fig.19.

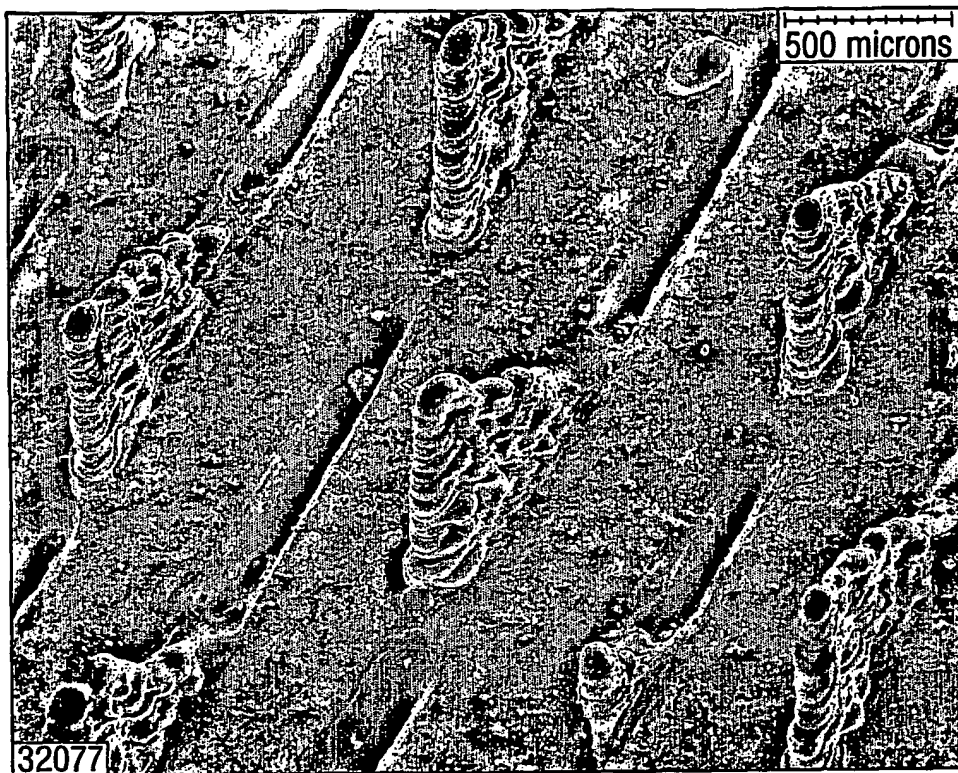


Fig.20.

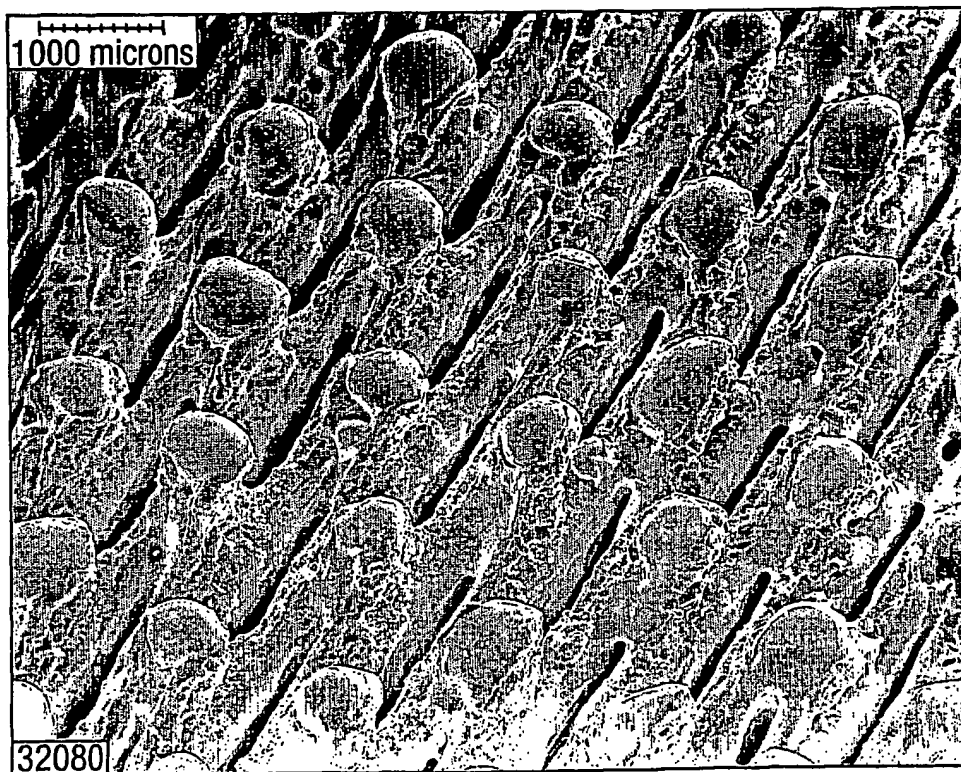


Fig.21A.



Fig.21B.



Fig.21C.

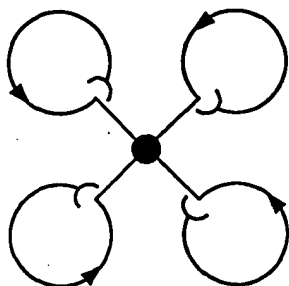


Fig.21D.



Fig.21E.

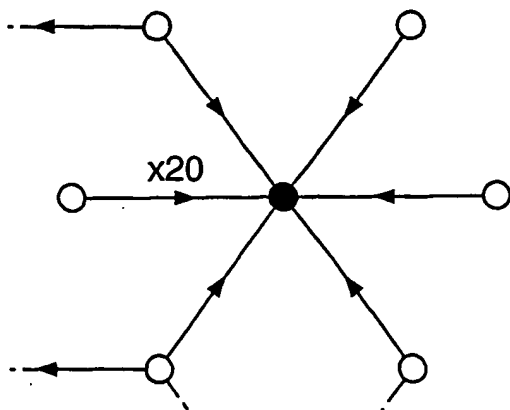


Fig.21F.





9/15

10/528966

Fig.22.

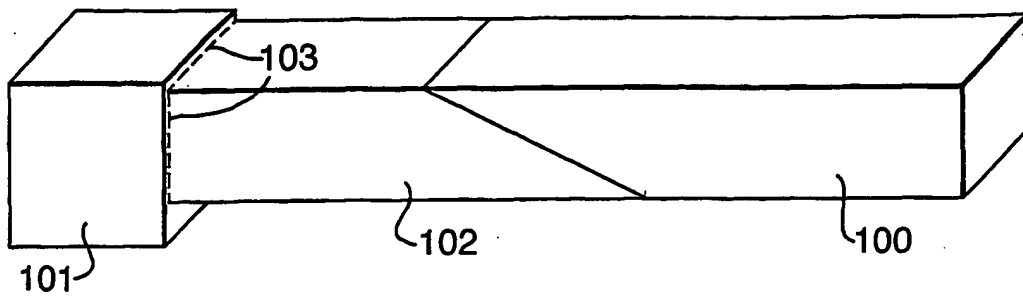


Fig.23.

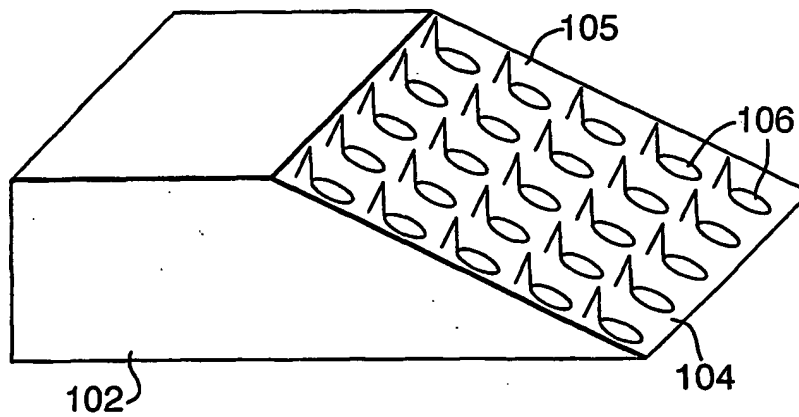
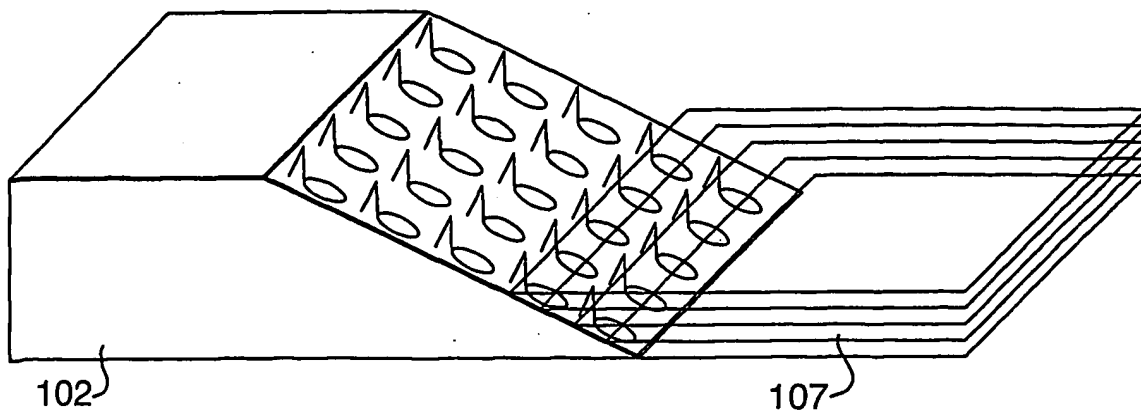


Fig.24.



10/15

10/528966

Fig.25.

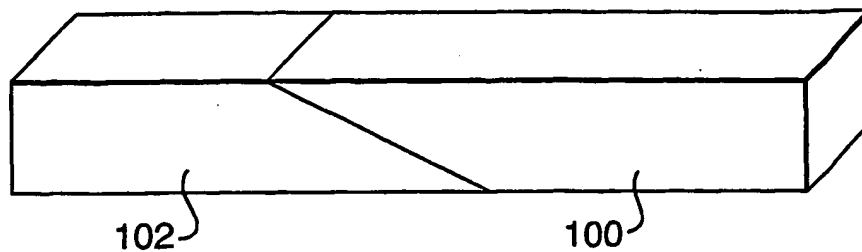


Fig.26.

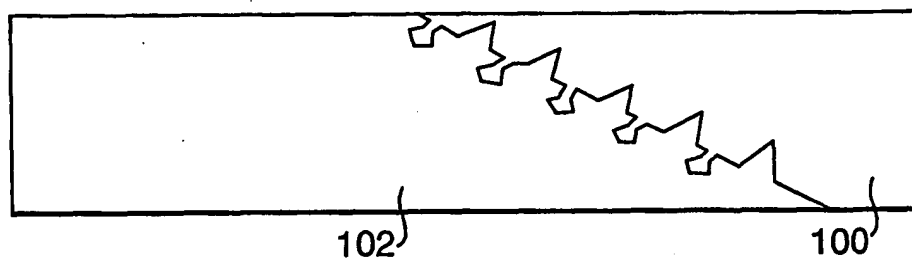
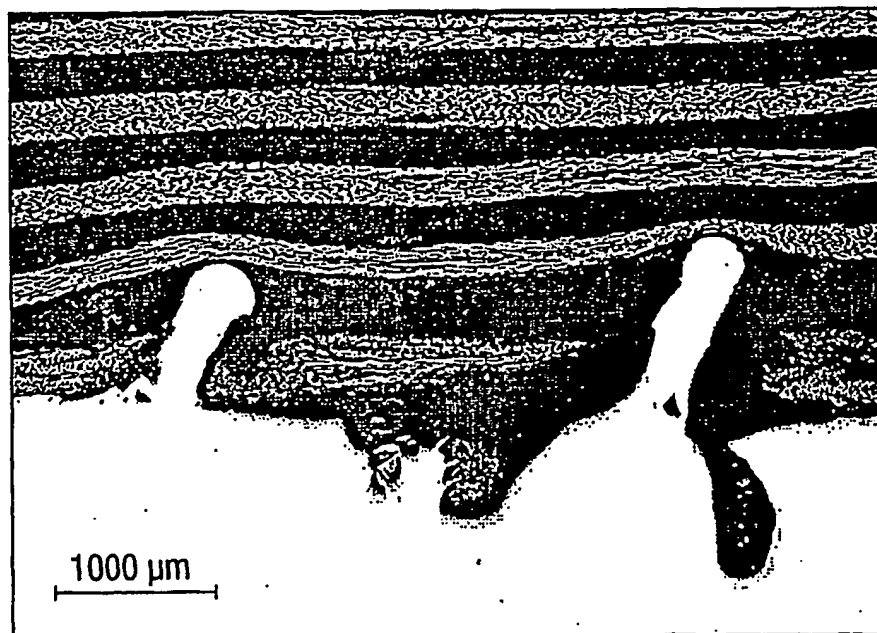


Fig.27.



11/15

10/528966

Fig.28.

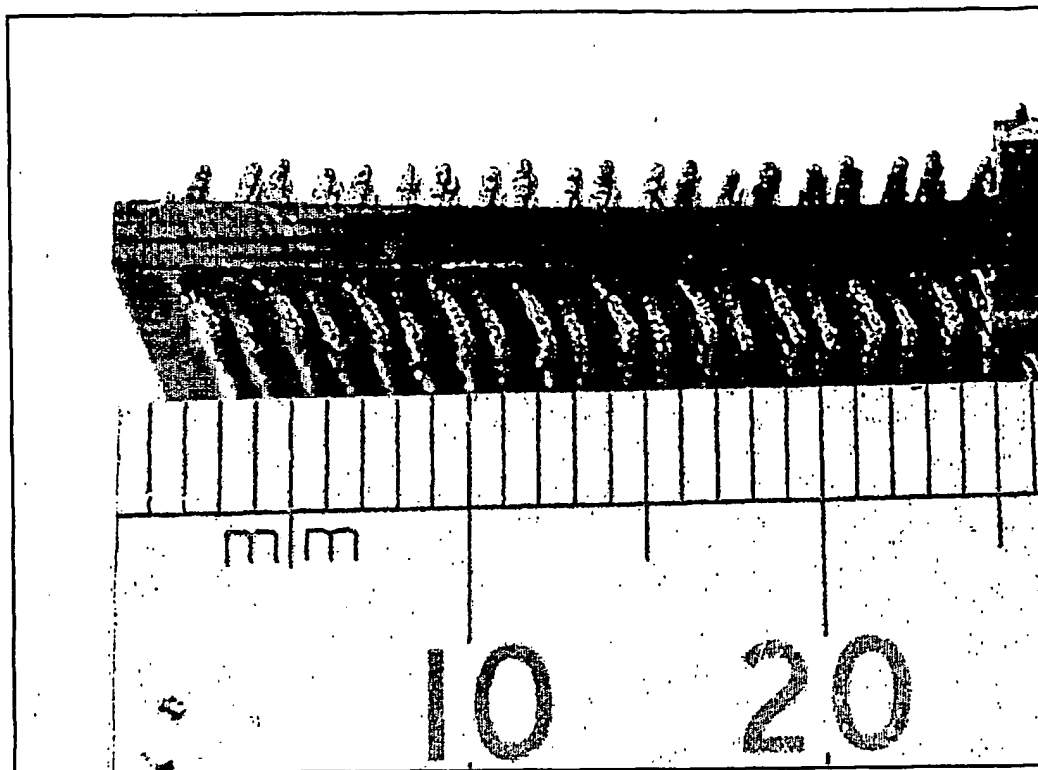


Fig.29.



12/15

10/528966

Fig.30.

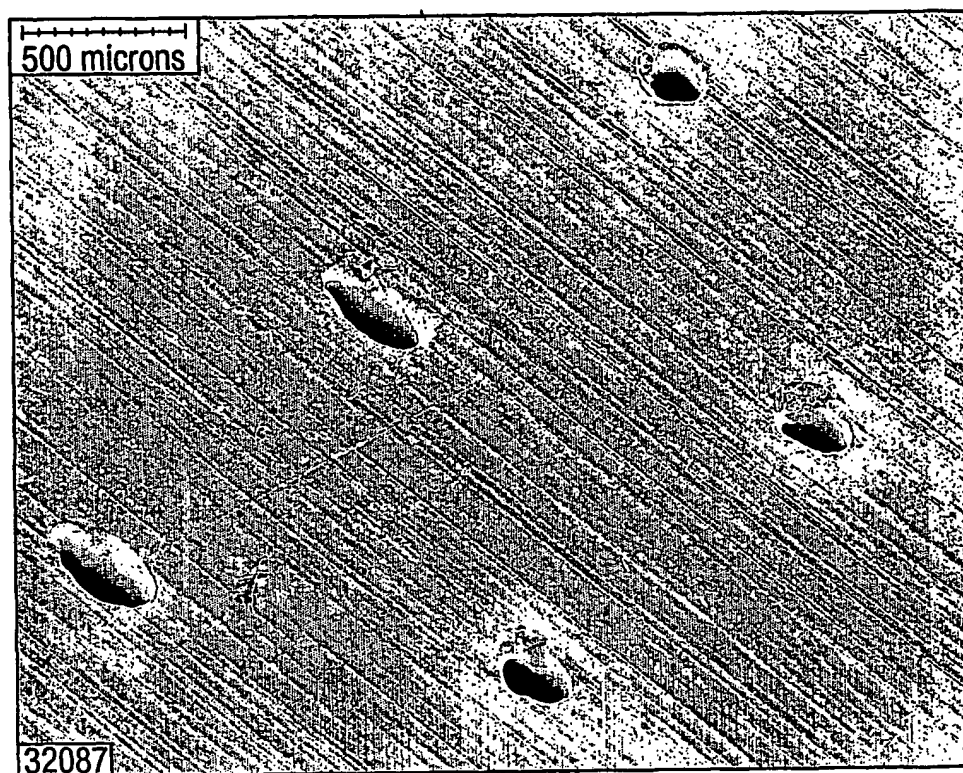


Fig.31.













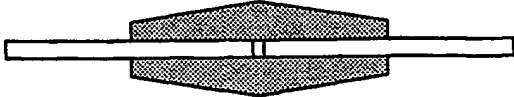






Class of joint	Specific joint description	
Butt joint	Conventional butt joint	
	Tongue and groove	
	Scarf tongue and groove	
	Landed scarf tongue and groove	
	Dovetail joint	
Bonded doubler		
Lap joints	Unsupported single lap	
	Tapered single lap	
	Double lap	
	Rebated lap joint	
Strap joints	Single strap joint	
	Double strap joint	
	Tapered strap joint	
Step joints	Step joint	
	Double step joint	
	Symmetric stepped joint	
	Asymmetric stepped joint	
Scarf joints	Asymmetric scarf joint	
	Symmetric scarf joint	

Fig.32.

Test/figure reference	T163 fig 13 & 14	T144 fig 15	T155 fig 16	T314 (a) fig 17	T314 (b) fig 17	T240 fig 18	T299 fig 19	T291 fig 20
Accelerating voltage (kV)	130	130	130	130	130	130	130	130
Beam current (mA)	3.8	2.4	2.6	2.4	2.4	4.2	2.4	5.2
Beam power (W)	494	312	338	312	312	546	312	676
approximate beam diameter (mm)	0.16	0.14	0.15	0.10	0.10	0.15	0.10	0.12
working distance (mm)	196	196	196	240	240	285	240	240
focus setting (au)	4.05	4.05	4.05	3.84	3.84	3.685	3.82	3.82
Primary deflection pattern	SQ240	lin 40	SQ 240	4H +110	4H +110	4H+110	4H+110	4H+110
Secondary deflection pattern	snowflake rev 1.1	super Q rev 4	quad q rev 1.1	UV.2	n/a	UV.1	n/a	UV.1
Motif show in Figure number	21E	21D	21C	21A	21F	21B	21F	21F
motif spacing (mm)	1.9	0.77	1.8	4.0	4.0	0.8	1.3	1.75
1° deflection pattern frequency (Hz)	2	25	1.0	1.01	2.5	1.5	2.5	2
2° deflection pattern frequency (Hz)	480	1000	240	2201	n/a	0.075	n/a	0.075
swipe length (mm), (plus 'drift' displacement)	1.05	1.5	2.5	0.7 (3)	3.1	3.0 (1.0)	3.0	3.0
swipe duration (ms)	0.35	1.0	1.04	0.11	2.2	1.5	0.91	1.14
average swipe speed (in x-y plane) (ms <sup>-1</sup> )	3.0	1.5	2.4	6.3	1.4	2	3.3	2.63
time interval between intersecting swipes (ms)	0.35	25	1.04	1000	990	1500	0.4	500

15/15

10/528966

Fig.32 (Cont).

approximate projection height (mm)	1.0	1.5	1.1	0.4	1.0	1.5	1.0	1.1
approximate minimum projection width (mm)	0.15	0.15	0.15	0.7	0.1	0.2	0.07	0.3
approximate cavity depth (mm)	1.0	2.0	1.0	0.4	0.5	1.8-2.0	1.2	1.8-2.0
number of motif pattern repeats at each location (=n)	20	20	10	20	30	17	50	10,+8
base material	316L stainless steel	316L stainless steel	316L stainless steel	Mild steel	Mild steel	Ti 6,4	Mild steel	Al 5083
thickness (mm)	6.4	6.4	6.4	12.7	12.7	3	12.7	2.0

Notes: Vacuum  $\sim 1 \times 10^{-3}$  mbar. All SI units indicated in parentheses, except (au) arbitrary machine specific units. Minimum cavity width approximately equal to beam diameter in most cases.